Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

International Paper Co
International Paper Co - Mansfield Mill
Mansfield, DeSoto Parish, Louisiana
Agency Interest Number: 328
Activity Number: PER20090001
Proposed Permit Number: 0760-00006-V9

I. APPLICANT

Company:
International Paper Co - Mansfield Mill
1202 Hwy 509
Mansfield, Louisiana 71052

Facility:
International Paper Co
1202 Hwy 509
Mansfield, DeSoto Parish, Louisiana
N 32° 09' 29" W 93° 33' 38"

II. FACILITY AND CURRENT PERMIT STATUS

Production activities at the Mansfield Mill (the Mill) include pulp production (SIC code 2611) and linerboard production (SIC code 2631). Primary operations at the Mill include multiple fuel-fired boilers (power), wood pulping, chemical recovery, tall oil, causticizing and lime recovery, non-condensable gas collection area, recycle area (de-inking), and papermaking.

Power Operations

The Mill uses five steam and/or power generating units to produce all of the steam needed for its processes. Two power boilers, capable of firing multiple fuels, provide steam for the Mill's production processes and to turbines for generating electricity. Two recovery boilers (also called recovery furnaces), firing primarily black liquor, also provide steam for the Mill's production processes and to turbines for generating electricity. Electricity is generated from three steam turbines and one gas turbine. The gas turbine is equipped with a heat recovery steam generator (HRSG), which generates steam from the turbine exhaust gases and combustion gases from a duct burner.

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Fuels combusted in the Mill's steam and power generating units include fossil fuels, biomass fuels, and waste/recycled (alternative) fuels. Fuels are generated onsite, delivered by truck or rail and stored onsite, or delivered by pipeline. Liquid fuel storage operations include fuel oils (Nos. 2, 4, and 6 fuel oils, distillate grades, used on-specification oil, and used petroleum mineral spirits) and gasoline storage and dispensing. Two No. 6 fuel oil tanks and one No. 2 fuel oil tank comprise the majority of fossil fuel storage capacity at the facility. Coal is delivered by rail car or truck. The coal handling equipment includes hoppers, vibrators, a crusher, conveyors, and silos. The conveyors are partially or totally enclosed, and these enclosed conveyors and silos are controlled with a baghouse. The crusher is not used and has been locked out permanently since the 1990s.

No. 6 fuel oil is stored for use in combustion sources including power boilers, recovery furnaces, and the Lime Kiln; No. 2 fuel oil can be burned in power boilers, recovery furnaces, the Lime Kiln, and several stationary internal combustion (IC) engines. Other grades of fuel oil (i.e., No. 4, distillate grades, used on-specification oil, or used petroleum mineral spirits) are combined with the No. 2 or No. 6 fuel oils in their respective tanks. Gasoline is stored at the facility for use in mobile equipment. Nine stationary diesel-fired IC engines provide backup power generation capacity during power outages or other emergencies.

The Nos. 1 and 2 Power Boilers are permitted to burn wood waste, coal, fuel oil, natural gas, and alternative fuels. Wood waste includes bark/wood debris, paper and solid wood residuals (from saw mills, plywood mills, oriented strand board mills, and clarifier fiber sludge), creosote-treated wood waste, recycle plant sludge, unrecycleable old corrugated container material, and bagasse. Fuel oils include Nos. 2, 4, and 6 fuel oils, distillate grades, used on-specification oil, used petroleum mineral spirits, and onsite fuel oil solids. Alternative fuels include tire-derived fuel (TDF), solid paraffin, high caustic, and pine tar fuels. The boilers are base-loaded on own-make bark and then on purchased bark, coal, fuel oil, natural gas, and alternative fuels, based on cost, availability (i.e., operations and/or market), and to a lesser degree other factors, such as weather conditions (dry bark is preferable to wet bark).

All steam generated from the power boilers, the gas turbine's HRSG duct burner, and recovery boilers is sent to a common header. From this header, steam can be sent to various processes (i.e., digesters and paper machines) or sent through one of the steam turbines to generate electricity. Any additional electricity needed is purchased from the Central Louisiana Electric Company (CLECO).

Pulping Operations

The Mill has three pulping lines: Primary, Secondary, and Semi-chemical. Hardwood and/or softwood chips are cooked with white liquor in the Primary and Secondary Continuous Digesters. Hardwood chips are cooked with white and green liquor in the Semi-chemical Continuous Digester. Anthraquinone can also be added to the digesters to improve reaction kinetics and increase pulp yield (the addition of this

chemical does not result in an increase above maximum production or emission rates for any source).

The pulp slurry from the digesters is refined, washed in diffusion washers, stored in high density storage tanks, and then sent to the paper machine area. Vents from the diffusion washers and associated filtrate tanks are collected in the High Volume, Low Concentration (HVLC) system. Spent cooking liquor (also called weak liquor or weak black liquor) from the filtrate tanks is used to wash the pulp in the digesters and/or sent to the chemical recovery area. Gases from the digester system are routed through the Low Volume, High Concentration (LVHC) Non-Condensable Gas (NCG) System, and then incinerated in the Lime Kiln or back-up NCG Incinerator.

Turpentine is recovered as a by-product from condensed gases from the pine pulping process. Overheads from the turpentine recovery process are routed through the LVHC NCG System.

Chemical Recovery Operations

Kraft and semi-chemical weak liquor (also called weak black liquor or spent cooking liquor) from the pulping process is filtered and stored in separate weak black liquor tanks. Spent caustic can be temporarily stored and added to the liquor stream as needed. The liquor is normally combined in the Swing Black Liquor Tank and concentrated in one of two parallel lines which include a six-effect evaporator system, intermediate storage, and a concentrator system. On the No. 1 side, the black liquor is further concentrated in either the No. 1 Concentrator (2 bodies) and the High Solids Concentrator (1 body), or the Nos. 1A/1B Super Concentrator (2 bodies) before entering the Heavy Black Liquor Tank. On the No. 2 side, the black liquor is further concentrated in the No. 2 Concentrator System (2 bodies).

Tall oil soap is produced as a by-product of the evaporation process mentioned above. Liquor is extracted from an intermediate stage of each evaporator system and sent to a dedicated soap skimmer where tall oil soap is skimmed from the top of the tank. The soap is then sent to collection tanks and combined in the soap storage tank prior to being sent to the Tall Oil Plant. Brine from the Tall Oil Plant is introduced prior to the concentrators in the chemical recovery area. The brine is pumped to the third-effect on the No. 1 and/or No. 2 Evaporator Systems. Some gases from the evaporator systems are partially condensed, while the remaining gases are routed to the LVHC NCG system. Condensates are stored in the foul condensate tank and sent to the steam stripper.

Targeted foul and combined evaporator condensates are collected in a closed collection system and hard-piped to the foul condensate tank or to the stripped condensate tank. The foul condensate tank is vented to the LVHC system and the stripped condensate tank is vented to the HVLC system. Condensates are hard-piped to any of the five existing diffusion washers. Any combined condensates not recycled to the diffusion washers are recycled to the causticizing area and used as dilution or wash water. In addition, the turpentine decanter underflow is routed to the sewer

when making certain grades of linerboard.

Liquor from the concentrators is combined in the concentrated black liquor storage tank and sent to liquor recovery. The Mill operates two liquor recovery systems that process concentrated liquor. The Mill recovers cooking chemicals by firing black liquor solids into either of two non-direct contact recovery boilers (No. 1 and No. 2 Recovery Boilers). The organics from the liquor are combusted to generate heat for process steam, while the inorganic chemicals collect in the bottom of the boilers in the form of molten smelt. Each boiler is fed heavy liquor and has its own associated smelt tank, electrostatic precipitator (ESP), and exhaust stack. The particulate from the ESP is sluiced with black liquor or water.

The molten smelt from each recovery boiler is directed to one of two dedicated tanks, where it is dissolved into weak wash or water to form green liquor, a prerequisite to regenerating white liquor in the causticizing operation. Each smelt tank is equipped with a Ducon scrubber system designed to capture particulates and gaseous pollutants and return them to the smelt tank.

Tall Oil Operations

The Tall Oil Plant produces crude tall oil (CTO) from black liquor soap. Black liquor soap is a by-product of the kraft pulping process that contains fatty resins and oils that have wide commercial uses. CTO is produced in a process called tall oil acidulation, where black liquor soap is combined with sulfuric acid and steam in a continuous reactor, allowing the production of CTO from the mixture. The remaining liquid is a combination of lignin and a brine solution, composed primarily of sodium sulfate and water. The brine solution is introduced back into the recovery cycle for the reclamation of the chemical value (sodium and sulfur).

The Tall Oil Plant allows the Mill to generate a maximum of 70,343 tons per year of CTO. Emission sources from the plant include a Heel Liquor Sample Tank, soap tanks, a continuous tall oil reactor, sulfuric acid tanks, CTO tanks, and brine tanks. The Heel Liquor Sample Tank and soap tanks minimize emissions of volatile organic compounds (VOCs) and total reduced sulfur (TRS) from downstream units as settled liquor is sent to weak black liquor storage. (Note: the Heel Liquor Sample Tank is only used during the first few minutes of soap unloading. The purpose of the tank is to collect any settled black liquor during transportation.) Most of the organics from this liquor are volatilized in the evaporators and destroyed in the kiln. The reactor is equipped with a wet scrubber for control of TRS emissions. In addition, the CTO tanks, brine receiver, and cleaner accepts tank are vented through the tall oil scrubber. The brine and settled black liquor from the soap tanks are introduced into the chemical recovery area. The settled black liquor from the Heel Liquor Sample Tank and soap tanks are recycled to any of three weak liquor tanks, while the brine is reintroduced into the chemical recovery area at the third-effect of the Nos. 1 or 2 Evaporator Systems.

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Causticizing and Lime Recovery Operations

In the causticizing/lime recovery area, dissolved smelt (green liquor) from the smelt dissolving tanks is clarified, stored, and then mixed with lime (calcium oxide) in the slaker. The sodium salts in the green liquor react with the lime to form white liquor and lime mud (calcium carbonate) in the causticizers. This white liquor/lime mud slurry is then clarified to separate the white liquor from the lime mud. The white liquor is sent to the digesters, and the lime mud is conditioned in the lime mud mix tank and washers, stored, thickened in the precoat filter, and then burned in the lime kiln to form lime. Fuels burned in the lime kiln include natural gas, fuel oils (Nos. 2, 4, and 6 fuel oils, distillate grades, used on-specification oil, and used petroleum mineral spirits) and LVHC NCG gases. The slaker and lime kiln are equipped with wet scrubbers. Weak wash from the lime mud washers is used to dissolve the inorganics in the smelt tank and for particulate matter/total reduced sulfur control in the smelt tank scrubbers.

Burnt lime from the lime kiln is conveyed to a lime silo prior to being added to the slaker. The Mill can also purchase fresh lime, which is blown from trucks and added to the same silo as the burnt lime. Fresh/reburnt lime is dropped into the slaker from the bottom of the silo. The lime silo and bucket elevator are exhausted through the slaker scrubber.

Gas Collection System

The Mill operates two separate gas collection systems: HVLC and LVHC. In the HVLC System, vents collected from the stripped condensate tank, diffusion washers, and associated filtrate tanks are burned in the natural gas-fired HVLC Incinerator. Combusted gases pass through a quench tower and scrubber, which is equipped with a mist eliminator, and then out the stack, while the liquid is routed to the sewer system.

In the LVHC NCG System, NCG gases are collected in three separate lines. The concentrated pulp system collects NCGs from the digester and turpentine recovery systems. The dilute pulp system collects NCGs from the digester chip bin vents. The Powerhouse concentrated system collects NCGs from the evaporator, concentrator, and steam stripper systems.

The three inlet streams each pass through a wet scrubber and are normally burned in the lime kiln. The NCG Incinerator is a backup system used to destroy the NCGs in case the lime kiln is unavailable. The incinerator is kept running continuously on standby, burning natural gas so that it remains at a suitable operating temperature should the NCGs need to be diverted from the lime kiln.

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Papermaking and Recycle Operations

The Mill produces unbleached and white top linerboard and corrugating medium from the Nos. 1, 2, and 3 Paper Machines. Furnish for each of the machines can be either virgin pulp from the three pulp lines or recycled pulp from the recycle plant.

Pulp from the pulp mill high density tanks or from the recycle tanks is sent to the low density tanks, where it is refined, screened, and combined with wet end additives prior to being diluted with recycled water at the primary and secondary head boxes of the machine. The low consistency slurry is then applied to the wire, where it forms a sheet. Water drains by gravity and by vacuum into a series of pits, while the wet sheet travels to the press and dryer sections to remove the remaining water. The resulting paper is cut and rolled onto finishing reels.

All paper machine water, called white water, is screened in the save-all to recover any lost fiber, and then either stored and recycled within the Mill or routed to the wastewater treatment plant. A fiber recovery system is also installed for the white water that is sent to the sewer. Recovered fiber is recycled via the broke system. Scrap paper from the finishing operations is repulped and combined with the recovered fiber from the save-all in the broke storage chests. This pulp is then recycled to the primary machine chest.

The recycle plant consists of two lines. One line has a continuous repulper; the other has two batch repulpers in parallel. Two additional repulpers (EQT 153 and EQT 154) are permitted, but have not yet been constructed. The recycle plant is capable of processing old corrugated containers, mixed papers, and de-inked fibers. The pulp slurry is screened, washed, and bleached (non-chlorine bleaching) prior to being sent to the low density tanks in the paper machine areas.

Additional Mill Operations

The Mill maintains miscellaneous operations that support pulp and paper production. Operations in this area include wood supply, raw water treatment, wastewater collection and treatment, waste treatment and disposal, road traffic, maintenance, process cooling, quality control, and other support operations that are insignificant sources of regulated air pollutants. The Woodyard processes all wood used in the digesters and all wood waste used as fuel in the power boilers.
Pine and hardwood logs are delivered by truck or rail car and processed separately. The logs are cut in the slasher, debarked, chipped, and conveyed to separate chip piles. Purchased chips are unloaded from trucks, screened, and conveyed to the hardwood or softwood chip piles. Hardwood chips are screened and conveyed to the Secondary or Semi-chemical Digesters, and pine chips are screened and conveyed to the Primary or Secondary Digesters. The chip screens are enclosed, and the chip conveyors are partially or totally enclosed to minimize emissions during transport.

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Wood waste is generated onsite and is purchased or brought in from off-site sources. Wood waste generated onsite includes several sources as a result of processing logs and or chips that are used in the digester system and purchased wood waste is brought in from off-site sources. Bark and sawdust from the slashers, bark from the debarking drums, fines from purchased or own-make chip screening, and purchased bark unloaded from trucks are conveyed to the bark hogs (where large pieces are reduced), and then conveyed to the bark pile. Reclaimed bark is then fired in the Nos. 1 and 2 Power Boilers.

Raw water is pumped approximately 28 miles from the Toledo Bend Reservoir and used throughout the Mill as process and cooling water.

The wastewater from the Mill consists of storm water from process areas, sanitary wastewater, and process wastewater from the papermaking, recycle, power, pulping, and causticizing and lime recovery operations. The process wastewater from the No. 3 Paper Machine area is sent to the primary clarifiers, where solids can be settled. The settled No. 3 Paper Machine process wastewater, process wastewater from the rest of the Mill, stormwater, and landfill leachate are routed to the equalization basin where solids settle and treatment occurs. The effluent from the equalization basin is then further treated by land application through spraying or wetlands flow. Most of the wastewater is sprayed onto the land (~600 acres), with treated water being collected and piped five miles for discharge to the Red River. The remaining wastewater is pumped to a wetland area for treatment, with treated water being collected and piped to the Red River. A surge basin stores wastewater during times of excessive flow. The sanitary wastewater is pretreated, chlorinated, then applied to land in combination with the clarified process wastewater.

The Mill disposes of process waste in an onsite landfill. Process waste includes ash from the power boilers, woodyard waste, sludge from the wastewater pretreatment process, recycle plant rejects, caustic plant waste (i.e., dregs, lime, and slaker grit), refuse, and miscellaneous waste (e.g., ditch clean-up).

Road traffic occurs from the delivery of raw materials (i.e., purchased chips, logs, paper machine additives, and chemicals) and the transport of products (i.e., paper, turpentine, and crude tall oil). Maintenance operations include welding and metal fabrication, painting, as well as routine equipment and building upkeep.

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III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by IP on January 22, 2009 requesting a Part 70 operating permit renewal/modification for the Mansfield Mill.

Project

A permit application and Emission Inventory Questionnaire were submitted by IP on January 22, 2009 requesting a Part 70 operating permit renewal/modification for the Mansfield Mill.

With this renewal/modification, International Paper proposes to:

- Remove the following sources: Caterpillar Back-up Diesel Air Compressor No. 1 (36-96), Auxiliary Diesel Generator No. 1 (38-96), and Auxiliary Diesel Generator No. 2 (39-96);

- Establish an IC Engine Emissions Cap (ENGCAP) to include the following sources: Detroit Diesel Fire-water Pump No. 2 (46-96), Detroit Diesel Fire-water Pump No. 3 (47-96), Clarifier Diesel Engine "Big Bubba" (48-96), Waste Clarifier Diesel Engine (49-96), Administration Building Diesel Generator (50-96), Effluent Lift Pit Diesel Engine (51-96), Mud Storage Diesel Engine (52-96), Clarke Fire-water Pump Engine (65-05), and the Lime Kiln Auxiliary Engine (66-05);

- Establish an emissions cap for Miscellaneous IC Engines (ENGCAP2) for engines not otherwise defined;

- Increase short-term (hourly) maximum rates for the Nos. 1 and 3 Paper Machines from their current levels to 120 scale weight tons (SWT)/hr;

- Update emission factors for the Tall Oil Reactor Scrubber (56-98f) to reflect testing performed in September and October of 2008;

- Increase the production from the Tall Oil Plant from 70,343 tpy to 80,000 tpy of tall oil;

- Change the source description of the Mud Storage Diesel Generator (52-96) to Mud Storage Diesel Engine (52-96) to accurately reflect the type of unit;

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- Update the evaporator systems to reflect the current configuration (as a result of the 1997 and 2004 Mansfield Production Increase Plan Projects): ID No. NCG-M/EQT 188 (previously Intermediate Solids Concentrator and High Solids Concentrator) is now two sources: High Solids Concentrator (EQT 185 and NCG-M) and 1A/1B Super Concentrator (EQT 189 and NCG-N).

- Change the source description of a unit in the No. 2 Paper Machine area from stock chest to machine chest to accurately reflect the type of unit: No. 2 PM – Machine Chest (ID No. 21-04k);

- Add cotton gin trash and cottonseed as fuels for the Power Boilers (1-78 and 2-78);

- Add a black liquor enhancer as chemical make-up and an alternative fuel in the Nos. 1 and 2 Recovery Boilers (4-78 and 5-78);

- Replace the No. 1 Spill Tank (28-93p) with a similar tank with the capability of storing spent caustic as well as black liquor;

- Reconcile emission calculations for the Landfill (25-93), Swing Weak Black Liquor Storage Tank (28-93e), Boiler Feedwater/Steam Condensate Treatment (53-96), and Paint Yard (54-96) to reflect actual operations;

- Update emission calculations to incorporate PM emissions for the Paper Machines (ID Nos. 20-93, 21-93, and 22-93);

- Evaluate sewering of turpentine decanter underflow (instead of recycling the stream to the diffusion washers);

- Update the Insignificant Activities list to include a new No. 2 Fuel Oil Storage Tank proposed in the Case-by-case Insignificant Activity Form submitted on November 19, 2008, as well as a new diesel storage tank proposed in the Case-by-case Insignificant Activity Form submitted on May 11, 2007.

- Update the General Condition XVII Activities to include Diesel Internal Combustion Engines used during Mill maintenance activities; and,

- Include miscellaneous permit updates such as corrections, clarifications, additions, or removal of regulations or specific requirements.

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Proposed Permit

Permit 0760-00006-V9 will be the renewal/modification of Part 70 operating permit 0760-00006-V8 for the Mansfield Mill.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	1392.05	1424.31	+ 32.26
SO_2	8859.84	8855.57*	- 4.27
NO_x	6228.37	6166.26	- 62.11
CO	9270.47	9255.26	- 15.21
VOC	5175.66	5191.47	+ 15.81
TSP	-	1683.18**	+ 1683.18
TRS	225.66	229.60	+ 3.94

* This total does not reflect the combined emissions cap placed on both of the power boilers (EQT 5 and EQT 35), which is 4,195.73 tpy. When this cap is in effect, the total emissions limitation is 6271.04 tons per year.

**Previously not reported.

VOC LAC 33:III Chapter 51 Toxic Air Pollutants (Tons/yr):

Pollutant	Before	After	Change
1,1,2-Trichloroethane	0.03	0.03	-
1,2,4-Trichlorobenzene	6.2	6.14	- 0.06
1,2-Dichloropropane	0.06	0.06	-
1,3-Butadiene	< 0.01	< 0.01	-
2,2,4-Trimethylpentane	< 0.01	< 0.01	-
Acetaldehyde	58.69	58.83	+ 0.14
Acetophenone	0.10	0.10	-
Acrolein	4.69	4.70	+ 0.01
Benzene	4.35	4.39	+ 0.04
Biphenyl	< 0.01	< 0.01	-
Carbon disulfide	1.03	1.03	-
Chlorinated dibenzo furans	< 0.0001	< 0.0001	-
Chlorinated dibenzo p-dioxins**	< 0.0001	< 0.0001	-
Chlorobenzene	< 0.01	< 0.01	-
Chloroform	0.38	0.38	-
Chloromethane	0.24	0.24	-
Cresol	< 0.01	< 0.01	-
Cumene	4.16	4.16	+ 0.02

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VOC LAC 33:III Chapter 51 Toxic Air Pollutants (Tons/yr): cont.

Pollutant	Before	After	Change
Ethylbenzene	0.39	0.06	- 0.33
Ethylene oxide	< 0.01	< 0.01	-
Formaldehyde	33.37	33.44	+ 0.07
Glycol ethers (Table 51.1)	1.80	1.78	- 0.02
n-Hexane	6.01	5.68	- 0.33
Hydroquinone	0.05	-	-
Methanol	2976.69	2977.88	+ 1.19
Methyl ethyl ketone	18.80	18.61	- 0.19
Methyl isobutyl ketone	1.35	1.33	- 0.02
Napthalenes	55.14	55.14	-
Phenol	1.08	1.08	-
PAH	0.83	0.83	-
Propionaldehyde	0.30	0.30	-
Styrene	3.64	3.63	- 0.01
Toluene	6.16	5.88	- 0.28
Trichloroethylene	0.14	0.14	-
Triethylamine	< 0.01	< 0.01	-
Xylene (mixed isomers)	4.82	3.54	- 1.28

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Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (Tons/yr):

Pollutant	Before	After	Change
Ammonia	184.87	184.85	- 0.02
Manganese*	36.87	36.81	- 0.06
Mercury*	0.16	0.16	-
Nickel*	3.49	3.53	+ 0.04
Selenium*	0.31	0.31	-
Sulfuric acid	134.21	134.21	-
Zinc*	30.21	30.17	- 0.04
POM	55.65	55.63	- 0.02
Antimony*	0.22	0.22	-
Arsenic*	0.10	0.10	-
Barium*	45.27	45.35	+ 0.08
Beryllium*	0.62	0.63	+ 0.01
Cadmium*	0.04	0.04	-
Chlorine	0.56	0.56	-
Chromium VI*	0.05	0.04	- 0.01
Cobalt*	1.28	1.28	-
Copper*	2.63	2.71	+ 0.08
Hydrochloric acid	318.40	318.36	- 0.04
Hydrofluoric acid	34.06	33.96	- 0.10
Hydrogen sulfide	124.84	132.20	+ 7.36
Lead compounds	0.42	0.42	-
Dichloromethane	180.14	180.10	- 0.04
Tetrachloroethylene	0.36	0.37	+ 0.01
1,1,1-Trichloroethane	1.88	1.89	+ 0.01

*and compounds
** includes 2,3,7,8-TCDB-p-dioxin

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.